Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X 60261

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Sixth Semester

Civil Engineering

CE 2354/CE64/10111 CE 605 – ENVIRONMENTAL ENGINEERING – II

(Regulations 2008/2010)

(Common to 1011111CE605 for B.E(Part-Time) Fifth Semester-Regulations 2010)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. What is known as sewerage ?
2. What are the sewerage systems available ?
3. Define "Sewerage system". List out the components of it.
4. What are the situations where the pumping of sewage becomes essential in sewage management ?
5. What are the objectives of grit removal ?
6. What is the significance of weir loading rate in sedimentation tank design ?
7. What is the significance of sludge solids retention time in ASP design ?
8. How do you determine hydraulic loading rate of a trickling filter ?
9. What do you mean by two stage digestion of sewage ?
10. Compare sewage farming and effluent irrigation.

PART – B **(5×16=80 Marks)**

11. a) Explain the various physico-chemical characteristics of sewage and state their environmental significance.

(OR)

b) Discuss the environmental legislation requirements while planning sewerage system.

12. a) i) Explain with neat sketch, the details of two pipe system. **(10)**

ii) A 30 cm diameter sewer with an invert slope of 1 in 400 is flowing $2/3^{rd}$ of the hill depth. Calculate the rate of flow in the sewers. **(6)**

(OR)

b) i) Design a circular sewer so as to cater to a residential colony based on the following data :

Area of the colony	=	36 ha
Per capita water consumption	=	35 lpcd
Population	=	8,000
Critical rainfall	=	4 cm/h
Ground slope	=	1 in 900. **(10)**

ii) Explain the steps involved in laying if sewer lines. **(6)**

13. a) i) What is Surface Overflow Rate (SOR) ? Derive the relationship between SOR and setting velocity of a particle for the removal of such particle. **(10)**

ii) Explain the designing of a screen chamber. **(6)**

(OR)

b) i) Design a septic tank for a colony population of 100 persons. Assume suitable data wherever necessary. **(8)**

ii) State the design criteria for a grit chamber and brief its construction and functioning. **(8)**

14. a) Explain the basic operations involved in activated sludge process with the help of a flow diagram.

(OR)

b) Explain the working of an aerobic type waste stabilization pond.

15. a) Explain the self purification process of rivers and the various stages of oxygen sag curve.

(OR)

b) Discuss the need for sludge dewatering and explain the various sledge dewatering methods.

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